

CLAIMS

1. A multi-speed transmission comprising:
 - an input shaft;
 - an output shaft;
 - a planetary gear arrangement having first, second and third
 - 5 planetary gear sets, each planetary gear set having first, second and third members;
 - said input shaft being continuously interconnected with said first member of said first planetary gear set, and said output shaft being continuously interconnected with said first member of said third planetary
 - 10 gear set;
 - a first torque-transmitting mechanism selectively interconnecting said second member of said second planetary gear set with a transmission housing;
 - a second torque-transmitting mechanism selectively
 - 15 interconnecting said third member of said second planetary gear set with said transmission housing;
 - a third torque-transmitting mechanism selectively interconnecting said second member of said first planetary gear set with said third member of said second planetary gear set;
 - 20 a fourth torque-transmitting mechanism selectively interconnecting said first member of said first planetary gear set with said second member of said third planetary gear set;
 - a fifth torque-transmitting mechanism selectively interconnecting said third member of said first planetary gear set with said
 - 25 transmission housing;
 - a sixth torque-transmitting mechanism selectively interconnecting said second member of said first planetary gear set with said third member of said third planetary gear set;

wherein fluid for applying said third and sixth torque-transmitting mechanisms is carried through a shaft which is connected to a sun gear of said first planetary gear set; and
said first, second, third, fourth, fifth and sixth torque-transmitting mechanisms being engaged in combinations of three to establish seven forward speed ratios and a reverse speed ratio between said input shaft and said output shaft.

2. The transmission of claim 1, wherein said first member of said second planetary gear set and said first member of said third planetary gear set comprise a single elongated ring gear.

3. The transmission of claim 1, wherein said second planetary gear set is a simple planetary gear set, and said third planetary gear set is a compound planetary gear set.

4. The transmission of claim 1, wherein each of said first members is a ring gear, each of said second members is a planet carrier assembly member, and each of said third members is a sun gear.

5. The transmission of claim 1, wherein said first member of said second planetary gear set is integral with said first member of said third planetary gear set.

6. The transmission of claim 1, wherein said shaft which is connected to the sun gear of the first planetary gear set is hollow and includes substantially radially-extending apertures to carry the fluid to said third and sixth torque-transmitting mechanisms.

7. A multi-speed transmission comprising:
an input shaft;
an output shaft;
a planetary gear arrangement having first, second and third
5 planetary gear sets, each planetary gear set having first, second and third
members;
said input shaft being continuously interconnected with said
first member of said first planetary gear set, and said output shaft being
continuously interconnected with said first member of said third planetary
10 gear set;
said first member of said second planetary gear set being
integral with said first member of said third planetary gear set;
a first torque-transmitting mechanism selectively
interconnecting said second member of said second planetary gear set with a
15 transmission housing;
a second torque-transmitting mechanism selectively
interconnecting said third member of said second planetary gear set with said
transmission housing;
a third torque-transmitting mechanism selectively
20 interconnecting said second member of said first planetary gear set with said
third member of said second planetary gear set;
a fourth torque-transmitting mechanism selectively
interconnecting said first member of said first planetary gear set with said
second member of said third planetary gear set;
25 a fifth torque-transmitting mechanism selectively
interconnecting said third member of said first planetary gear set with said
transmission housing;
a sixth torque-transmitting mechanism selectively
interconnecting said second member of said first planetary gear set with said
30 third member of said third planetary gear set;

wherein fluid for applying said third and sixth torque-transmitting mechanisms is carried through a shaft which is connected to a sun gear of said first planetary gear set;

wherein each of said first members is a ring gear, each of said
35 second members is a planet carrier assembly member, and each of said third members is a sun gear;

wherein said first member of said second planetary gear set and said first member of said third planetary gear set comprise a single elongated ring gear;

40 wherein said second planetary gear set is a simple planetary gear set, and said third planetary gear set is a compound planetary gear set; and

said first, second, third, fourth, fifth and sixth torque-transmitting mechanisms being engaged in combinations of three to establish
45 seven forward speed ratios and a reverse speed ratio between said input shaft and said output shaft.

8. The transmission of claim 7, wherein said shaft which is connected to the sun gear of the first planetary gear set is hollow and includes substantially radially-extending apertures to carry the fluid to said third and sixth torque-transmitting mechanisms.

9. A multi-speed transmission comprising:
an input shaft;
an output shaft;
a planetary gear arrangement having first, second and third
5 planetary gear sets, each planetary gear set having a ring gear, a planet carrier assembly member, and a sun gear;

said input shaft being continuously interconnected with said ring gear of said first planetary gear set, and said output shaft being continuously connected with said ring gear of said third planetary gear set;

10 six torque-transmitting mechanisms selectively interconnecting said ring gears, planet carrier assembly members, and sun gears of said planetary gear sets with a transmission housing or with other gear members of the first, second and third planetary gear sets;

 wherein said sun gear of the first planetary gear set is splined

15 onto a hollow sun gear shaft, and fluid for applying at least two of said torque-transmitting mechanisms is carried through said hollow shaft; and

 said six torque-transmitting mechanisms being engaged in combinations of three to establish at least seven forward speed ratios and a reverse speed ratio between said input shaft and said output shaft.

10. The multi-speed transmission of claim 9, wherein said six torque-transmitting mechanisms comprise:

 a first torque-transmitting mechanism selectively interconnecting said planet carrier assembly member of said second planetary

5 gear set with said transmission housing;

 a second torque-transmitting mechanism selectively interconnecting said sun gear of said second planetary gear set with said transmission housing;

 a third torque-transmitting mechanism selectively

10 interconnecting said planet carrier assembly member of said first planetary gear set with said sun gear of said second planetary gear set;

 a fourth torque-transmitting mechanism selectively interconnecting said ring gear of said first planetary gear set with said planet carrier assembly member of said third planetary gear set;

- 15 a fifth torque-transmitting mechanism selectively
interconnecting said sun gear of said first planetary gear set with said
transmission housing; and
- a sixth torque-transmitting mechanism selectively
interconnecting said planet carrier assembly member of said first planetary
20 gear set with said sun gear of said third planetary gear set.

11. The transmission of claim 9, wherein said hollow sun gear shaft includes substantially radially-extending apertures to carry said fluid to the third and sixth torque-transmitting mechanisms.